

REMARKS

Claims 1-30 are pending in the application. Applicant respectfully requests reconsideration of the rejection.

Claims 1-30 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,009,269 to Burrows et al. (hereinafter "Burrows") in view of U.S. Patent No. 6,434,590 to Blelloch et al. (hereinafter "Blelloch"). Initially the Office Action acknowledges that Burrows does not disclose suspending a first thread for requesting access to a resource to which unsynchronized accesses can be performed as recited in claim 1. However, the Office Action cites Blelloch as remedying the deficiencies of the primary reference.

The present invention recognizes latent synchronization errors and purposefully draws them out in analyzing multi-threaded programs. See Specification page 3, line 29 - page 4, line 2 and page 5, lines 2-6 as originally filed. This is achieved by the present invention causing an occurrence of a latent unsynchronized access to a resource (e.g., memory) and from the caused occurrence identifying (detecting) the synchronization error. See Specification page 5, lines 4-11 and page 11 line 19 - page 12 line 5 as originally filed.

The claims as now amended emphasize such (1) recognition of susceptibility to latent unsynchronized access and (2) causing and detecting of latent unsynchronized accesses. Representative claim language in base Claims 1, 9, 11, 17, 19, 23, 25 and 29 as now amended reads:

"determining that aresource of interest is susceptible to unsynchronized accesses..., such that there can be latent unsynchronized accesses..."

"...causing occurrence of a latent unsynchronized access..." and

"...from said caused latent unsynchronized access, detecting unsynchronized accesses..."

Support for the foregoing claim amendments is found at least on Specification page 5, lines 3-6, page 11, lines 18-20 and 26 as originally filed. No new matter is introduced.

None of the cited references focuses specifically on latent synchronization errors. Neither Burrows et al. nor Blelloch et al. suggests causing occurrence of latent synchronization errors and detecting the same in contrast to the present invention as now claimed.

The approach taken in Burrows et al. monitors a program throughout and records concurrency state information while multiple threads are executed. The recorded data are then analyzed to determine (detect) synchronization errors. See col. 1, lines 50-55 and col. 2, lines 30-34. Thus occurrence of a latent unsynchronized access is not caused and detected as in the claimed present invention (i.e., is not caused by substeps a, b, c recited in base Claims 1, 9, 11, 17, 19, 23, 25 and 29 as now amended).

Blelloch et al. provides an assignment manager that determines tasks available for scheduling. The assignment manager supplies a set of available tasks and makes them available to each of several processing elements. Each processing element continuously draws and executes tasks from the assignment manager as long as there are tasks to be executed. The assignment manager proceeds as long as there are more program tasks to be executed. Blelloch et al. reduces parallel-processing memory requirements by selecting a subset of available tasks for parallel processing and assigning higher priorities to the earlier available tasks in a sequential schedule. Blelloch et al. also maintains the threads prioritized by their sequential execution order in the presence of synchronization variables (e.g., write-once synchronization variable). See col. 2, lines 43-60; col. 7, lines 64 - col. 8, line 2; col. 10, lines 25-35 and col. 9, lines 57-65.

Blelloch et al. does not cause occurrence of latent unsynchronized access and detection of the same as in the present invention as now claimed. Thus no combination of Burrows et al. and Blelloch et al. make obvious the present claimed invention. The dependent claims inherit the foregoing claim limitations of the respective base claims. As such the § 103 rejection of Claims 1 - 30 is believed to be unwarranted and overcome.

Acceptance is respectfully requested.

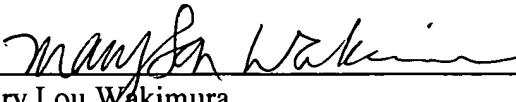
CONCLUSION

In view of the above amendments and remarks, it is believed that all claims (Claims 1-30) are in condition for allowance, and it is respectfully requested that the application be passed to

issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 
Mary Lou Wakimura
Registration No. 31,804
Telephone: (978) 341-0036
Facsimile: (978) 341-0136

Concord, MA 01742-9133

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